

ABSTRACT

A method and computer system is provided for automatically constructing a time series model for the time series to be forecasted. The constructed model can be either a univariate ARIMA model or a multivariate ARIMA model, depending upon whether predictors, interventions or events are inputted in the system along with the series to be forecasted. The method of constructing a univariate ARIMA model comprises the steps of imputing missing values of the time series inputted; finding the proper transformation for positive time series; determining differencing orders; determining non-seasonal AR and MA orders by pattern detection; building an initial model; estimating and modifying the model iteratively. The method of constructing a multivariate ARIMA model comprises the steps of finding a univariate ARIMA model for the time series to be forecasted by the method of constructing an univariate model; applying the transformation found in the univariate model to all positive time series including the series to be forecasted and predictors; applying differencing orders found in the univariate model to all time series including the series to be forecasted, predictors, interventions and events; deleting selected predictors and further differencing other predictors; building an initial model wherein its disturbance series follows an ARMA model with AR and MA orders found in the univariate model; estimating and modifying the model iteratively.

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